EARTH

Drones Across America

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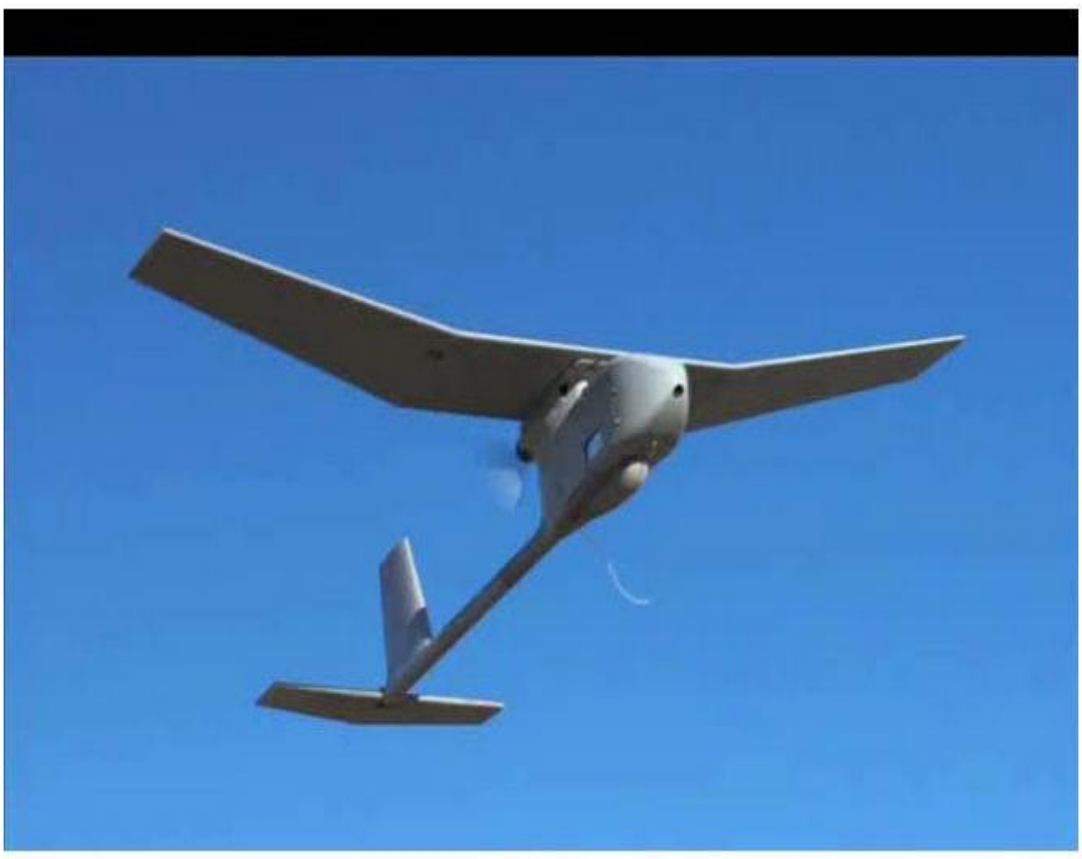

Unmanned aerial systems, or drones, are joining computers, GPS and the Internet as technologies with a military heritage that made the switch to civilian life. Drones are increasingly finding use in the peaceful pursuit of wilderness conservation. At the end of this month, for example, a drone will buzz the Missouri River as it flows through the Lower Brule Reservation in South Dakota.

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"Results from this effort will be analyzed to investigate the location and severity of erosion, and the lasting impacts of cultural and environmental losses," said Kathy Neitzert of the U. S. Geological Survey (USGS) in a **press release**.

Last year, a drone snapped pictures of the same 7-mile stretch of river. The USGS and Lower Brule Sioux Tribe Environmental Protection Office will compare the shots from each year and look for changes. Those changes might be dramatic. The Lower Brule Sioux Tribe estimates that up to eight feet of riverbank are slipping away each year.

ANALYSIS: Garbage Drone Could Clean Up Oceans

The USGS **National Unmanned Aircraft Systems Project Office** has been pioneering the use of drones in research and monitoring since 2008. The unmanned craft have been used to monitor invasive species in Hawaii, survey sandhill cranes in Colorado, and observe conditions at mines in West Virginia.

There are now three types of drones in the USGS air force.

Raven RQ-11A: The workhorse of the USGS, these drones have a 4.5 foot wingspan and can fly 30 miles per hour at 300 feet for 90 minutes. Raven's were the first drones to be used and have completed the most missions.

Predator MQ-9: The same drones used to rain fire on enemy combatants has now being used to monitor fires. The long flight time and state of the art sensors of the Predator make it a good candidate for continued use in wildfire detection and mapping.

PHOTOS: Western Wildfires

Hawk RQ-16: A newcomer to the fleet, the compact Hawk has the ability take-off and land vertically and hover in one spot. The Hawk may be used to photograph archeological sites, inspect dams and monitor volcanoes.

IMAGES:

The Raven RQ-11A (USGS)

A USGS research with a Raven (USGS)